



Spectral Gamma-Ray Borehole
Log Data Report

Page 1 of 2

Borehole

30-06-09

Log Event A

Borehole Information

Farm : <u>C</u>	Tank : <u>C-106</u>	Site Number : <u>299-E27-85</u>
N-Coord : <u>42,932</u>	W-Coord : <u>48,302</u>	TOC Elevation : <u>645.40</u>
Water Level, ft :	Date Drilled : <u>7/31/1974</u>	

Casing Record

Type : <u>Steel-welded</u>	Thickness : <u>0.280</u>	ID, in. : <u>6</u>
Top Depth, ft. : <u>0</u>	Bottom Depth, ft. : <u>100</u>	

Borehole Notes:

This borehole was drilled in July 1974 to a depth of 100 ft using 6-in. casing. The drilling report does not indicate if the borehole casing was perforated or grouted. The casing thickness is presumed to be 0.280 in., on the basis of the published thickness for schedule-40, 6-in. steel tubing. The top of the casing, which is the zero reference for the SGLS, is approximately flush with the ground surface.

Equipment Information

Logging System : <u>1</u>	Detector Type : <u>HPGe</u>	Detector Efficiency: <u>35.0 %</u>
Calibration Date : <u>10/1996</u>	Calibration Reference : <u>GJO-HAN-13</u>	Logging Procedure : <u>P-GJPO-1783</u>

Log Run Information

Log Run Number : <u>1</u>	Log Run Date : <u>02/03/1997</u>	Logging Engineer: <u>Alan Pearson</u>
Start Depth, ft.: <u>0.0</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>35.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>

Log Run Number : <u>2</u>	Log Run Date : <u>02/04/1997</u>	Logging Engineer: <u>Bob Spatz</u>
Start Depth, ft.: <u>98.5</u>	Counting Time, sec.: <u>100</u>	L/R : <u>L</u> Shield : <u>N</u>
Finish Depth, ft. : <u>34.0</u>	MSA Interval, ft. : <u>0.5</u>	Log Speed, ft/min.: <u>n/a</u>



Borehole

30-06-09

Log Event A

Analysis Information

Analyst : E. Larsen

Data Processing Reference : P-GJPO-1787

Analysis Date : 05/16/1997

Analysis Notes :

This borehole was logged by the SGLS in two log runs. The pre- and post-survey field verification spectra met the acceptance criteria established for the peak shape and detector efficiency, confirming that the SGLS was operating within specifications. The energy calibration and peak-shape calibration from these spectra were used to establish the channel-to-energy parameters used in processing the spectra acquired during the logging operation.

Casing correction factors for a 0.280-in.-thick steel casing were applied during analysis.

The man-made radionuclides Cs-137, Co-60, and U-235 were detected in this borehole. The presence of Cs-137 was measured almost continuously from the ground surface to a depth of 52.5 ft. Measurable Cs-137 contamination was also detected from 54 to 72.5 ft, at 91.5 ft, and at the bottom of the logged interval (97 to 98.5 ft). The presence of Co-60 was detected from 22 to 22.5 ft and at 74.5 ft. U-235 contamination was detected at the ground surface.

The K-40 concentration values increase from 37.5 to 39.5 ft, then become variable from 41 to 71 ft. The K-40 concentrations increase gradually from 72 to 80 ft, then remain elevated to the bottom of the logged interval.

It was not possible to identify any of the 609-keV peaks used to derive the U-238 concentrations between the ground surface and 3.5 ft. This occurred because high gamma-ray activity associated with the nearby Cs-137 peak (661 keV) created an elevated Compton continuum extending to the 609-keV region, causing the MDL to exceed the measured U-238 concentration.

Additional information and interpretations of log data are included in the main body of the Tank Summary Data Reports for tanks C-102 and C-106.

Log Plot Notes:

Separate log plots show the man-made and the naturally occurring radionuclides. The natural radionuclides can be used for lithology interpretations. The headings of the plots identify the specific gamma rays used to calculate the concentrations.

Uncertainty bars on the plots show the statistical uncertainties for the measurements as 95-percent confidence intervals. Open circles on the plots give the MDL. The MDL of a radionuclide represents the lowest concentration at which positive identification of a gamma-ray peak is statistically defensible.

A combination plot includes the man-made and natural radionuclides, the total gamma derived from the spectral data, and the Tank Farms gross gamma log. The gross gamma plot displays the latest available digital data. No attempt has been made to adjust the depths of the gross gamma logs to coincide with the SGLS data. An additional log plot compares spectral gamma data collected with the Radionuclide Logging System (RLS) in 1993 with spectral gamma data collected with the SGLS in 1997. Uncertainty bars and MDLs are not included on these plots.